

## **REMARKS**

Reconsideration of the present application in view of the above amendments and following remarks is respectfully requested.

### **Status of the Claims**

Claims 12-33 are presented. Claim 12 is amended to emphasize that the poly- $\alpha$ -olefin (PAO) is not a single compound, but a complex mixture. Support is found in the specification, inter alia, on page 4, lines 7-11. Claim 12 is also amended for clarity. No claims are cancelled. New claim 33 is added. Support is found in the specification as filed, inter alia, on page 6, lines 12-15.

No new matter has been introduced.

### **Summary of the Invention as Claimed**

As presently amended, the claimed invention is drawn to a cosmetic composition comprising a poly- $\alpha$ -olefin mixture produced by a dehydrating polymerization under specified conditions, of at least one primary alcohol from a selected group (claims 12-33). The composition comprising the poly- $\alpha$ -olefin mixture has a high spreading value of  $>1000 \text{ mm}^2/10 \text{ min}$  (claim 33).

### **Rejections under 35 U.S.C. § 102(b)**

Claims 12-14 and 16-32 were rejected under 35 U.S.C. § 102(b) as being anticipated by Collin (US 6,464,967). Applicants respectfully traverse the rejection.

Collin discloses a make-up composition comprising a poly- $\alpha$ -olefin wax having a melting point ranging from 50-80°C, resulting from the homopolymerization of alpha-olefins having at least 10 carbon atoms.

Collin discloses that her poly- $\alpha$ -olefin wax is obtained by the well-known art process of **homopolymerization of pure alpha-olefins** (col. 2, lines 33-38). This standard method is well-known in the art to provide a **limited and clearly**

**defined set of oligomers** (<http://www.ineosoligomers.com/126-Products.htm>).

There are many commercial products available which are prepared by this process, represented by tradenames such as Nexbase®, and INCI names such as polydecene.

In contrast, applicants' poly- $\alpha$ -olefin mixture is obtained by a different process (dehydration/polymerization) from different starting materials (primary alcohols versus alpha-olefins) under different reaction conditions, which inevitably leads to PAOs which are different from the classical products known in the art.

Thus, the dehydration/polymerization of primary alcohols under applicants' described reaction conditions leads to a mixture with "...no exact structural formula for the poly- $\alpha$ -olefins obtained because, under the dehydrating polymerization conditions, the primary alcohols in question are isomerized into various unsaturated monomers which then polymerize with one another" (page 4, lines 7-11; cf. International patent application PCT/EP02/11392, incorporated by reference on page 3, lines 21-22, corresponding to Zander et al., US 7,351,871).

Table 1 shows the unexpectedly superior properties of a cosmetic emulsion prepared using applicants' PAO mixture according to the invention (column 2, isononyl oligomer hydrogenated) versus the identical composition prepared with an art-standard PAO (column 4, Nexbase® 2006FG). The Nexbase®-based emulsion is clearly inferior to applicants' hydrogenated isononyl oligomer-based composition, both with regard to viscosity, especially after 1 week, as well as with regard to emulsion stability on storage. Regarding storage stability, the standard emulsion containing Nexbase® was clearly inferior after 4 weeks, and had separated after 8 and 12 weeks, whereas the hydrogenated isononyl oligomer-based emulsion of the invention was still perfectly stable after 12 weeks under the standard test protocol.

Further, the cited art in no way teaches or suggests the high spreading value of applicants' poly- $\alpha$ -olefin mixture, as presently claimed.

These surprising and unexpected effects in the cosmetic emulsions clearly distinguish applicants' PAO mixtures over the prior art materials.

**Rejections under 35 U.S.C. § 103(a)**

Claim 15 was rejected under 35 U.S.C. § 103(a) as being obvious over Collin et al. (US 6,641,821; "Collin et al."). Applicants respectfully traverse the rejection.

Collin et al. discloses a cosmetic composition comprising a film-forming polymer, a poly- $\alpha$ -olefin wax having a melting point ranging from 50 to 80°C resulting from the homopolymerization of an alpha-olefin, and a liquid fatty phase. Collin et al. discloses the inclusion of a non-volatile oil in the composition, which may be a Guerbet alcohol.

The same arguments made in regard to the PAOs of Collin apply to Collin et al. Applicants' PAO mixtures are distinct from PAOs known in the art, providing cosmetic emulsions which contain them with unexpected and advantageous viscosity and stability properties. Further, the cited art in no way teaches or suggests the high spreading value of applicants' poly- $\alpha$ -olefin mixture, as presently claimed. There is no teaching or suggestion in Collin et al. that would indicate such improved properties, nor does Collin teach or suggest that PAOs prepared by a different method (other than homopolymerization of alpha-olefins) would provide such improved properties. As such, Collin is an improper reference for an obviousness rejection.

**Conclusion**

In summary, in view of the above claim amendments and remarks, Applicants believe that all of the pending claims as amended are in condition for allowance. The Examiner is respectfully requested to reconsider, withdraw the rejections and allow the claims.

If any additional fees are required in support of this application,  
authorization is granted to charge our Deposit Account No. 50-1943.

Respectfully submitted,

June 18, 2009

/Robert N. Henrie II/  
Robert N. Henrie II  
Registration No.: 60,851  
Fox Rothschild LLP  
2000 Market Street; Tenth Floor  
Philadelphia, PA 19103-3291  
Tele: (215) 299-2000  
Fax: (215) 299-2150

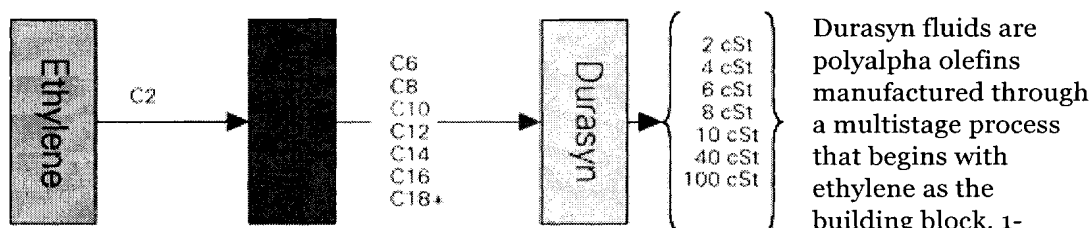
# INEOS Oligomers

[Home](#) > [Products](#) > [Polyalpha Olefin \(PAO\)](#) > [Products](#)

## Products

Durasyn® polyalpha olefins are manufactured by INEOS Oligomers using integrated feedstock. The physical and chemical properties of PAOs are ideal to meet the demanding requirements of formulations for high quality synthetic lubricants.

### Production process and chemical structure



Decene is one of the alpha olefin monomers used in the production of Durasyn polyalpha olefins and it is oligomerized in the presence of an acidic catalyst to give a mixture of decene dimers, trimers, tetramers and higher oligomers. In the next step, this mixture of oligomers is distilled to permit the tailoring of the oligomer distribution and produce specific product cuts designated by their Kinematic Viscosities at 100°C.

In the final step, these highly branched decene oligomers are additionally hydrogenated and filtered to produce the Durasyn grades. Hydrogenation is necessary to give the final product enhanced chemical inertness and added oxidative stability. A wide range of viscosities can be produced, the most common viscosity grades being 2,4,6,8, and 10cSt at 100° C. The final process gives a limited and clearly defined set of very stable molecules with a paraffinic structure.

